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ABSTRACT

Predicting that when presented with a general context children and adults would produce different specific inferences, a study examined children's and adults' script representations of a common event and the use of representation in comprehension. In the first phase of the study, 23 fourth grade and 48 college students were asked to generate actions that typically occur while buying lunch at the school cafeteria. In the second phase of the study, 30 fifth grade and 30 college students listened to a short passage based on the generated scripts and were later given a recognition task. Each subject was handed a booklet containing 16 sentences, one sentence per page. Each sentence was one of four types: verbatim, unrelated, or one of two types of related foils--changed or new. There were 8 sentences stated verbatim in the story, 3 sentences unrelated to the lunchroom story, and 5 related foils--2 changed foils and 3 new foils. The changed foils were sentences presented in the story but changed slightly so that the sentence was made to be either congruent with the children's lunchroom script or congruent with the adults' lunchroom script. New related foils were sentences not explicitly stated in the lunchroom story but containing actions consistent with either the adults' or children's lunchroom script. Unrelated foils were sentences having no relation to the story. Findings revealed that children rated foils that were congruent with their representation as more likely to have been stated in the passage than foils that were congruent with the adults' representations. The adults showed the opposite tendency. (HOD)

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A DEVELOPMENTAL COMPARISON OF SCRIPT-BASED INFERENCE GENERATION

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A DEVELOPMENTAL COMPARISON OF SCRIPT-BASED INFERENCE GENERATION

Abstract

This study examined children's and adults' script representations of a common event and the use of the representation in comprehension. It was hypothesized that while many aspects of the script representations might be similar for both the children and adults, the specific components of the underlying script might not be exactly identical. Given this variation in script knowledge, it was predicted that when presented with a general context, the specific inferences produced by children and adults should differ. In the first phase of this study, fourth graders and college students generated script representations of a common event sequence. In the second phase, 5th graders and college students listened to a short passage based on the generated scripts and were later given a recognition task. Children rated foils which were congruent with their representation as more likely to have been stated in the passage than foils which were congruent with the adults' representation. The adults showed the opposite tendency. Possible implications of these findings toward interpreting developmental differences in inference processing are then discussed.

A DEVELOPMENTAL COMPARISON OF SCRIPT-BASED INFERENCE GENERATION

The role of prior knowledge is very important in practically all phases of comprehension and memory. In fact, every act of comprehension must involve the interaction between the material to be understood and the cognitive structures or past experiences of the understander. Various representational theories postulating the use of schemas (Bartlett, 1932; Rumelhart & Ortony, 1977), or scripts (Schank & Abelson, 1977) state that past experience provides a contextual structure for discourse comprehension, enabling the listener to make inferences concerning the existence of unstated events. Very rarely is all information explicitly stated in discourse. Rather, the comprehender is left to fill in the gaps, disambiguate situations, and come to a plausible understanding of the situation (Clark & Clark, 1977).

It has been hypothesized that if people use knowledge to elaborate explicit information during discourse comprehension, their ability to later discriminate between explicit and inferred information should be impaired. For example, Sulin and Dooling (1974) presented subjects with a passage which could either be about a famous person (Adolf Hitler or Helen Keller) or a fictitious person (Gerald Martin or Carol Harris). Subjects who were led to believe that the passage was about the famous character falsely recognized more unstated ideas that were consistent with their knowledge of the character.

A similar finding was obtained in a study by Brown, Smiley, Day, Townsend, and Lawton (1977). These researchers presented third, fifth, and seventh graders with a passage concerning an escape episode. Half the children were led to believe that the central character was an escaped convict, while the remainder were told that the character was the chimpanzee hero of the television program "Planet of the Apes". Brown et al. (1977) found that all the children, regardless of age, were more likely to falsely recognize distractor items that were consistent with their expectations than ones that were inconsistent.

Given the importance of the knowledge base in directing inference production, certain developmental differences in the specific inferences produced might be expected. Recent research has shown that both children and adults have organized knowledge representations or scripts about common event sequences. A free generation task is often used to provide an index of the content and degree of elaboration within a common event sequence. Bower, Black, and Turner (1979) have shown that college students show quite a bit of agreement when generating actions that typify a common event sequence. Similarly, Nelson, Gruendel, & Hudson, (Note 1) has shown that preschoolers also show quite a bit of agreement as to which actions are part of a script, though, certain developmental differences do appear. For example, preschoolers' scripts are less elaborated that those of adults'; i.e., not as many actions are stated. This difference should affect the number of inferences generated during comprehension.

A second developmental difference might be that given a general situation, the specific components of the underlying script might not be exactly identical for both the children and adults. Children's

experiences are very different from those of adults, and thus, while many components of a script may be similar for both adults and children, many may be different. For example, think about one's knowledge about eating lunch in a school cafeteria. While many components of this event should be similar for both school-aged children and college students; i.e., getting food, paying for it, eating, talking, etc., the ordering of these events and many other specific actions may vary. Thus, one might predict that presented with a general context, the specific inferences produced by children and adults should differ. This hypothesis was tested in the present experiment.

Another prediction can be made about possible developmental differences in the false recognition data. Many investigators have proposed that adults engage in more constructive processing and are more likely to use relevant background knowledge to make the material more meaningful or "non-arbitrary" (Bransford, Stein, Vye, Franks, Auble, Mezynski, & Perfetto, 1982; Johnson-Laird, 1982; Paris, 1978; Paris & Lindaur, 1977; Trabasso & Nicholos, 1980). Paris and Lindaur (1976), for example, presented sentences to 7-, 9-, and 11-year old children which contained an instrument that was stated either explicitly or implicitly. Using a cued recall test, the younger children were found to use the instrument as an effective retrieval cue only if it was explicitly stated in the sentence. Older children, however, recalled the sentences easily with instrument cues regardless of implicit or explicit presentation. The authors took this finding to support the hypothesis that the ability (or inclination) to infer additional relationships about sentences increases with age (Paris & Lindaur, 1976; 1977). Jonhson-Laird (1982) discusses similar developmental differences between fifth graders and college students.

Similarly, Bransford et al. (1982) hypothesized that there are developmental differences, as well as differences between "good" and "poor" learners, in the general approach that students take to comprehend material. Working with fifth graders and adults, they observed that successful students seemed to take an active role in the comprehension process, questioning aspects of the text and comparing their experiences with the written description. Less successful students, on the other hand, showed little tendency to relate the to-be-learned information to previous knowledge or to material previously stated in the text. Their primary mode of study seemed to be rereading the material they had previously read. The authors also showed that children were less likely than adults to make material meaningful or "non-arbitrary" as an aid for memorization.

Thus, given this variation in the tendency to engage in constructive processing, one might predict that the greater tendency to falsely recognize items that are consistent with the knowledge base than items which are inconsistent with the knowledge base might be more pronounced for the adults than for the children. This hypothesis was also tested.

In this experiment we presented both children and adults with a story about a familiar event sequence. The event, eating lunch in the school cafeteria, was one which we felt would be familiar to both the children and adults, but, as we stated above, should involve actions which are not necessarily identical for both children and adults. A pilot study was conducted in which both fourth graders and college students were asked to free generate the actions involved within this event sequence. In this way, we could assess the similarities as well

as the differences between the children's and adults' knowledge of this event. Differences in which actions are falsely recognized, depending on whether they are consistent with the college students' knowledge base or the children's knowledge base was taken as an indication of variations of inference processing between children and adults.

Free Generation Phase

Procedure and Results

A free generation task was employed in the pilot study in order to assess children's and college students' knowledge about a common event sequence. Twenty-three fourth graders and 48 college students were asked to generate actions which typically occur while buying lunch at the school cafeteria. This event sequence was chosen because it was familiar to both age groups. It should be pointed out, however, that the actions involved in buying lunch at the school cafeteria are not necessarily identical for both children and adults. While there are these differences between the two event sequences, it was felt that there should also be enough overlap between the two for a meaningful comparison to be made.

The fourth graders' data was obtained in a classroom environment. The task was a writing assignment lead by the teacher. The instructions were as follows:

> I'm going to ask you to tell me what your ordinary lunchtime break is like. I want you to imagine that there is a new student entering this class and that this student does not know a thing about buying lunch or what you normally do during lunchtime break. I want you to make a list of things that this student would have to know in order to get around during lunchtime break. Be aware that nothing you might have to say is unimportant. Remember, this student knows absolutely nothing about lunchtime break. Things that might be very simple or common to you might be very important to the new

> student, so I want you to put all the common and simple things you do during your lunchtime break in your list. I want you to start your list with the first thing the student would need to know in order to buy lunch and end it with going back to the classroom after lunch-break. Also, when you make up your list, put the things the student should know in the order they would occur. Any questions?

The college students' data were collected in group sessions from 1 to 5 students. The instructions used in this portion were very similar to those used by Bower et al. (1979). Subjects were asked to write a list of prototypical actions that could serve as a description of buying and eating lunch at one of the school's cafeterias. (A specific cafeteria was mentioned and all the subjects regularly went to that cafeteria.) They were told to start the list with "Arriving at the cafeteria" and end it with "Going back to your normal routine." They were further instructed to include approximately twenty major actions or events and to put them in the order that they would occur. It was not felt that the differences in instruction given to the fourth graders and college students should significantly effect our assessments of the two age groups' knowledge.

The results from this phase of the study showed that there was high reliability within age groups in terms of the frequency with which particular actions of a script were mentioned. We randomly divided each group in half and correlated the frequencies of specific actions by the two halves. The Pearson correlation for the fourth graders was .89 and the Pearson correlation for the adults was .93. The two correlations did not significantly differ ($p > .05$). Thus, the two age groups did not differ in terms of consistently mentioning specific actions.

In order to generate stereotypes or scripts of "Buying Lunch at the School Cafeteria" for each age group, all the actions mentioned by at least 30% of each age group were compiled. The level of 30% was chosen because there seemed to be a sharp break at this point between agreed upon actions and actions which were idiosyncratic to each individual. The scripts for this event for the children and adults along with the percentage of subjects who stated each action are presented in Tables 1 and 2 respectively. The number of actions agreed upon was 27 for the children and 26 for the adults. Thus, in terms of the number of actions generated, the knowledge of this event for both the children and adults appeared equally elaborate.

Insert Tables 1 and 2 About Here

Upon generating the two scripts a short story was written by the authors which described a person eating lunch in the school cafeteria. The story was ten sentences in length and was comprised of the actions that were found to be common to both the children's and adults' lunchroom script. The story was as follows:

> It was time for lunch so Jill walked into the cafeteria. "Oh, I had better check my money" she thought and she took it out to be sure she had enough. The cafeteria was very crowded so she hurried to get in line. "The food looks good today" she thought as she put it on her tray. She made sure she had taken enough napkins and walked over to a table in the back of the cafeteria. Since she was very hungry she ate quickly, stopping only for a moment to talk to a friend sitting next to her. When she was finished, she walked away from the table, taking her tray with her. She stopped at the trash can and threw away her garbage. Some of her friends joined her and they walked outside together talking and laughing. Jill decided that lunchtime was the best time of the day.

False Recognition Phase

Subjects

An independent sample of children and adults were then presented this story to remember in the second phase of the experiment. The subjects consisted of 30 fifth graders attending a public elementary school in Oceanside, California and 30 college students attending the university of California at San Diego. The fifth graders came from the same school as the fourth graders who participated in the free generation task. The college students were undergraduates enrolled in lower-division psychology classes who received course credit for their participation.

Materials and Procedure

All testing for the fifth graders was conducted at the elementary school in a group classroom setting. Testing of the college students was conducted at the university in group sessions with the size of the groups ranging from 1 to 3 subjects. The lunchroom story generated from the free generation task was tape recorded using a female native English speaker. All subjects were instructed that they were about to hear a story about buying and eating lunch at the school cafeteria. They were further instructed to listen to the story very carefully because the next day they would be asked questions about the content of the story. The story was presented twice for both the children and adults.

The following day subjects were given a recognition test of the sentences within the story. Each subject was handed a booklet which contained 16 sentences, one sentence per page. Each sentence was one of four types: verbatim, unrelated, or one of two types of related foils;

changed or new. There were 8 sentences which were stated verbatim in the story, 3 sentences which were unrelated to the lunchroom story, and 5 related foils; 2 changed foils and 3 new foils (described below).

Changed foils. The changed foils were sentences that were presented in the story but were changed slightly so that the sentence was either made to be congruent with the children's lunchroom script (and thus incongruent with the adults' lunchroom script) or congruent with the adults' lunchroom script (and thus incongruent with the children's script). The sentences that were changed are the two sentences that are italicized in the lunchroom story. The changed foils congruent with the children's script were:

"The cafeteria was very crowded and because she had to pay she hurried to get in line."

and,

"Some of her friends joined her and they walked to the playground together talking and laughing."

The changed foils congruent with the adults' script were:

"The cafeteria was very crowded and because she had to order she hurried to get in line."

and,

"Some of her friends joined her and they walked to their next class together talking and laughing."

New related foils. New related foils were sentences which were not explicitly stated in the lunchroom story but contained actions which were consistent with either the adults' or children's lunchroom script. Three new foils were constructed that were congruent with the children's script and three new foils were constructed that were congruent with the

adults' script. The three new foils that were congruent with the children's script were:

"After paying the person at the register, she went to get her milk.",

"The teacher excused the table after they finished eating."

and,

"She threw away her milk carton and napkins in the first trash can."

The three new foils that were congruent with the adults' lunchroom script were:

"After paying she looked around the cafeteria for an empty table.",

"She checked the prices on the menu to see what she could afford."

and,

"After she put her food on her tray she went to pay the person at the cash register."

Unrelated Foils. The unrelated sentences were sentences that had no relation to the eating lunch at school script. These foils were:

""She cleaned her room because it was very messy.",

"She went skiing over vacation."

and,

"She visited the art museum after school."

Using the above sentences, two different booklets were compiled; one congruent with the children's script and one congruent with the adults' script. One booklet contained the changed and new foils that were related to the children's script (children's booklet), and one booklet contained the changed and new foils that were related to the adults' script (adult booklet). The verbatim and unrelated sentences

were identical for both booklets. The order of presentation of sentences within each booklet were random. Half the subjects from each grader received each booklet. Thus, children and adults were given a booklet with related foils that were either congruent or incongruent with their lunchroom script.

Subjects were instructed to go through the booklet page by page and to rate each sentence as to how sure they were that each sentence was a verbatim replication from the story. If they thought that a given sentence was stated in the story and were sure of it (yes - sure), they were to give the sentence a rating of 1. If they thought that the sentence was stated but were unsure (yes - unsure), they were to give the sentence a rating of 2. If they thought that the sentence was not stated in the story but were unsure (no - unsure), they were to give a rating of 3, and if they were sure that a sentence was not in the story (no - sure), they were to rate it a 4. The rating scale was posted where all subjects could see it and instructions to the subjects emphasized that sentences must be word for word replications of the original sentences in order to be considered "old" sentences.

Design. The complete design of this study then turns out to be a 2x2x4 factorial design: Grade (fifth graders, college students), booklet congruence (children's booklet, adults' booklet), and sentence type (verbatim, unrelated, changed, new). Grade and booklet congruence were both between-subject factors and sentence type was a within-subject factor.

Results

Verbatim and Unrelated Sentences. The mean ratings of the verbatim and unrelated sentences for each group are presented in Table 3. A 2x2 (Grade x Booklet Congruence) Analysis of Variance was performed on the mean ratings of the verbatim sentences. There was no significant effect of Grade; the mean rating for fifth graders was 1.35 and the mean rating for college students was 1.52. Nor was there a significant effect of Booklet Congruence; subjects who were given the booklet with the children's related foils gave a mean rating for the verbatim sentences of 1.46, subjects who were given the booklet with the adults' related foils had a mean of 1.39. There was also no significant interaction between these two factors.

Insert Table 3 About Here

No analysis was performed on the Unrelated Sentences since all the subjects in three of the four groups rated all these sentences as No - Sure, and thus they had a mean rating of 4.0. Two fifth graders in the Children's Booklet group rated all the Unrelate Sentences as No - Not Sure. The mean rating for the unrelated sentences in this group was 3.86.

Changed and new related foils. The mean ratings of the changed and new related foils for each group are presented in Table 4. A 2x2x2 (Grade x Booklet Congruence x Sentence Foil Type) mixed Analysis of Variance was performed on the mean ratings of the foils. There was a significant main effect of Grade, ($F(1,56) = 28.8$, $p < .001$, indicating that the fifth graders were more willing to give lower ratings or to say that a sentence had been presented ($M = 2.77$) than were the college

students (M = 3.49). The main effect of Booklet Congruence was non-significant, (p > .05). However, there was a significant interaction between Grade and Booklet Congruence, ($F(1,56) = 9.9$, p > .005. Children tended to rate the foils that were congruent with their script lower (M = 2.48) than foils that were congruent with the adults' script (M = 3.06). Alternately, adults rated the foils that were congruent with their script lower (M = 3.35) than foils that were congruent with the children's script (M = 3.63). This interaction did not vary significantly with sentence type.

Insert Table 4 About Here

In addition, the main effect of Sentence Type was also significant with the mean rating for the changed foils equaling 2.64 and the mean rating of the new related foils equaling 3.62, $F(1,56) = 76.13$, p < .001. There was also a significant interaction between Grade and Sentence Type, $F(1,56) = 12.12$, p < .05. The fifth graders rated the changed foils with a mean of 2.08; that is, irrespective of which booklet they received, fifth graders judged these sentences as being presented before. The college students rated the changed foils with a mean of 3.2; that is, irrespective of which booklet they received, the college students, on the average, judged these sentences as not being presented before. The mean ratings of the new related foils for the fifth graders was 3.46 and for the college students, was 3.79; they were consistently in the No range of the rating scale. This difference concerning the ratings of the changed foils might indicate a difference in response bias between grades. There was no significant interaction between Booklet Congruence and Sentence Type. Thus, with both types of foils (changed and new related foils) all subjects tended to rate foils

congruent with their script lower than foils incongruent with their script.

In order to assess whether adults were more likely overall to engage in constructive processing, a comparison was made between the tendency of the adults to falsely recognize foils that were consistent with their scripts versus foils that were inconsistent with their scripts and the same tendency with the children. This can be accomplished by looking at the interaction between Booklet Congruence and Age; i.e., the mean rating of the adults given the adult booklet minus the mean rating of the adults given the children booklet compared to the mean rating of the children given the children booklet minus the mean rating of the children given the adult booklet. An Analysis of Variance indicated that while there was a main effect of Congruence, $F(1,56) = 9.88$, $p > .05$, indicating that subjects presented sentences which are congruent to their scripts were more likely to falsely recognize the sentence ($M = 2.92$) than subjects given sentences which were incongruent with their script ($M = 3.34$), this congruence effect did not vary as a function of Grade. Thus, contrary to expectations, the tendency to engage in constructive processing in this context did not vary with age.

Discussion

Theories postulating notions such as scripts or schemata (Rumelhart & Ortony, 1977; Schank & Abelson, 1977) have suggested that these organized representational structures enable people to infer unstated propositions from events and statements. While it has been suggested that the form of the representation of event knowledge is invariant across development (Mandler, 1983; Nelson, Fivush, Hudson, &

Lucariello, 1983; Nelson et al., Note 1) there are certain developmental differences in the content of the representation. In this experiment, we found that the specific content, the actions composing the "eating lunch at school" script, varied developmentally. While many of the same general actions were stated in both the children's and adults' scripts (e.g., eating, getting food, sitting down at a table), the ordering of the actions and many of the specific actions mentioned varied with age.

Given this variation in the knowledge bases between the children and college students it was predicted that some of the specific inferences produced by the children and adults, given a story about "eating lunch at school", should also differ. The data from this experiment supported this hypothesis. Children gave lower ratings to related foils (were more willing or more confident to say a foil was presented) which were congruent with the children's script than foils which were congruent with the adults' script. Adults alternately gave lower ratings to foils which were congruent with the adults' script than to foils which were congruent with the children's script.

In addition, there does not seem to be evidence from this experiment to suggest that the children made fewer inferences or elaborated upon the material any less than the adults. Within both grade levels, subjects were very accurate at classifying verbatim and unrelated sentences, but when subjects were shown the foils congruent with their knowledge base, they were more likely to give that material a lower rating than if it was incongruent with their knowledge base. This effect did not vary as a function of age or the type of related foil (changed or new related).

Fifth graders, as compared to the college students, seemed to have a greater bias to say yes, a sentence was presented, to the changed foils; i.e., sentences that had many words in common with a sentence that was actually presented. The children consistently rated the changed foils in the "Yes" range of the rating scale, regardless of whether the information was consistent or inconsistent with their lunchroom script. The college students, on the other hand, consistently rated these foils in the "No" range of the scale. This large difference in ratings between grades did not occur for the related foils, nor did the two age groups significantly differ in terms of their ratings of the valid and unrelated foils. Thus, it seems that children pay closer attention to the actual wording used and rely on this information to a greater extent than the college students. This observation has previously been shown within the literature (Liben & Posnansky, 1977; Valentine, Note 2). However, even with this response bias, the children consistently rated the changed foils that were congruent with their script lower on the rating scale than the changed foils that were congruent with the adults' script.

Thus, it appears that developmental differences in the contents of event knowledge produce variations in the specific inferences produced by children and adults. However, the degree to which the knowledge bases of children and adults tend to vary in terms of both elaborateness and specific content is not known. The "eating lunch at school script" was specifically chosen because it was thought that the experiences of the adults and children in this context were different and should thus produce scripts that varied in specific content. Additional research needs to be conducted in order to assess whether developmental variations in specific content would occur with scripts where both

children and adults share common experience (e.g., eating at McDonalds). Existing research seems to suggest that developmental variations occur in the number of actions stated but not necessarily in the specific actions stated (Nelson & Gruendel, 1981; Nelson, et al., 1983; Nelson, et al, Note 1). The actions that the young children state are the same actions that are produced by older subjects. However, one should expect variations in the inferences produced to the extent that there are related variations in the specific content of scripts. Experiments investigating developmental differences in inference performance which base their results on only one set of foils may be biasing their results towards one age group if those foils are more congruent to one age groups knowledge base than to the other. Clearly, further research needs to be conducted in order to assess the contributions of variations in the knowledge base toward explaining developmental differences in inference performance.

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Table 1

Children's Eating Lunch At School Script

Total Number of Subjects: 23

	Percent of Students Who Stated Action
1) Teacher excuses class	32
2) Go to cafeteria	43
3) Get in line to pay	69
4) Pay for lunch	100
5) Get milk	95
6) Get napkin	91
7) Get silverware	95
8) Set in second line	30
9) Get lunch	77
10) Go to table	39
11) Sit at table	91
12) Eat lunch	82
13) Stay for ten minutes	45
14) Raise your hand when done	30
15) Teacher excuses table	50
16) Go to trash cans	32
17) Put paper stuff in trash can 1	50
18) Put food in trash can 2	45
19) Put away tray	30
20) Put spoon/fork in dishwashing bucket	30
21) Walk out back door	45
22) Go to playground	86
23) Play games	68
24) First bell rings	45
25) Second bell rings	73
26) Line up	68
27) Teacher brings you into class	73

Note: At least 30% of the subjects must have stated an action in order for it to be included in the script.

Table 2

Adults' Eating Lunch At School Script

Total Number of Subjects: 48

	Percent of Students Who Stated Action
1) Enter cafeteria	100
2) Pick up school newspaper	33
3) Look at menu	50
4) Decide what to eat	58
5) Wait/get in line at appropriate counter	56
6) Order	77
7) Wait for order	83
8) Observe people in cafeteria	54
9) Pick up order/food	96
10) Get something to drink	66
11) Wait in cashier line	33
12) Take out money/wallet	40
13) Pay cashier	90
14) Go to condiment table	50
15) Take condiments/food accessories	71
16) Look for friends	31
17) Look for/find table	75
18) Talk to friends	63
19) Read	69
20) Eat/drink	88
21) Look around cafeteria	31
22) Finish eating	38
23) Clean off table	36
24) Throw away trash	82
25) Pick up belongings	33
26) Leave cafeteria/Go to next class	80

Note: At least 30% of the subjects must have stated an action in order for it to be included in the script.

Table 3

Mean Ratings of 5th Graders and Adults
to Verbatim and Unrelated Sentences
as a Function of Booklet Congruence and Sentence Type

Grade	Booklet Congruence	Sentence Type: Verbatim	Sentence Type: Unrelated
5th Grade			
	Children	1.43	3.86
	Adults	1.28	4.0
College			
	Children	1.50	4.0
	Adults	1.55	4.0

MSe(between) = .15238

Note: Yes, sure = 1; Yes, not sure = 2; No, not sure = 3; No sure = 4.

Table 4

Mean Ratings of 5th Graders and Adults
to Changed and New Related Sentences
as a Function of Booklet Congruence and Sentence Type

Grade	Booklet Congruence	Sentence Type: Changed	Sentence Type: New
5th Grade			
	Children	1.63	3.33
	Adults	2.53	3.58
College			
	Children	3.33	3.93
	Adults	3.07	3.65

MSe(between) = .54785 MSe(within) = .37936

Note: Yes, sure = 1; Yes, not sure = 2; No, not sure = 3; No sure = 4.